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P 81

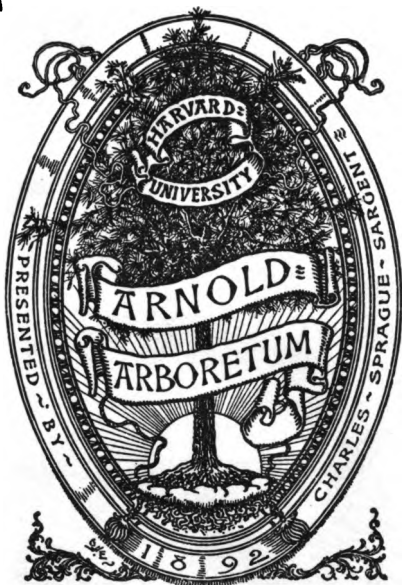
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FOREST BRANCH.

No 1.

NOTE ON CASUARINA PLANTING.

BY

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NOTE ON CASUARINA PLANTING.

THE varying and in some districts apparently excessive cost of casuarina plantations induced me to call for information from all districts in the circle in which casuarina is planted. District Forest-officers were asked in December 1893 to furnish the following information :—

- (1) Average yield per acre, age at which felled and net revenue.
- (2) Usual date of formation of nurseries with cost of (a) preparation, (b) watering, (c) permanent and temporary establishment per mensem, and (d) rate of wages paid for coolies with number of months employed.

(This information to be reduced to show the cost per acre of plantation.)

- (3) Cost per acre of planting out, including (a) sinking and cleaning wells with number per acre, (b) digging pits for seedlings, (c) planting out, (d) watering, (e) replanting casualties and (f) establishment, permanent or temporary.
- (4) With regard to the charges for 3 (d) watering, (i) number of years usually watered and number of months in each year, (ii) cost during first year, second year, and (iii) number of seedlings a cooly is supposed to water per diem and the number of times watered each month.

2. The information has been furnished more or less. It has naturally taken some time to tabulate as old returns had to be examined. That from Chingleput is particularly incomplete and unreliable. No attempt had been made in Trichinopoly to record the yield per acre. It is evident, and to be regretted, that in these districts in the old days sufficient interest was not taken to check the work. It is not to be wondered at if the cost has been high. No branch of forest cultural operations lends itself more readily to cheating by subordinates.

3. The following is a summary of the information received, omitting Chingleput, which is not worth tabulating :—

(a) *Average age of felling.*—The average age of felling is ten years.

(b) *Outturn per acre.*—The average outturn ranges between 50 tons in Nellore and 28 in North Arcot. The plantations in North Arcot are situated some distance from the coast, have less moisture and are altogether less favourably placed. It is intelligible that the growth is slower.

(c) *Cost of nurseries.*—The seed is sown in nurseries in Nellore, North and South Arcot about February, in Tanjore not until June and in Trichinopoly at various times. There is no reason for delaying the sowing in Tanjore until June, and in future the practice in other districts should be followed. Trichinopoly is somewhat different; as the padugais are liable to flooding during the rains, the formation of the

nurseries has to be deferred. The cost of nurseries differs very materially and cannot be accounted for by difference in the rate of wages paid to coolies. In Nellore the cost of nursery for one acre of plantation amounted to 9 annas 1 pie. In Tanjore it would appear the cost has been Rs. 5 per acre. In South Arcot it is shown as Rs. 2-5-7. It is impossible to gather from the North Arcot statement the cost reduced to an acre of plantation, but the cost per acre of nursery is given as Rs. 140. The area this nursery is supposed to provide with plants is not given.

(d) *Cost per acre of planting*—(i) *The cost of pitting* in Nellore and Tanjore amounted to 6 annas per 1,000 plants, in South Arcot to 6 annas per acre and in Trichinopoly is put down at Re. 1-1-6 per acre. There is ample scope for reduction in the last-named district. (ii) *The cost of planting out the seedlings* in Nellore and Tanjore was practically the same, 4 annas and 5 pies per acre. In South Arcot, inclusive of watering while planting it, amounted to one rupee per acre; the higher rate in this district compared with Nellore is due to the larger number of plants put out—1,210 per acre instead of 540. In Trichinopoly however the cost of planting out 1,210 seedlings is shown as Rs. 3-6-0 per acre. In future I think 9' x 9' may be adopted as a rule for the distance when planting, and the cost, I consider, should not exceed 6 annas.

(e) *Cost of watering*—(i) *Wells*.—The cost of sinking wells varied from 4 annas per well in Nellore and Trichinopoly to 14 annas in Tanjore. This naturally depends upon the soil and the depth of the water level below the surface. The number of wells per acre ranged from three-fourths of a well per acre in Nellore to two in Tanjore. It is not advisable to stint the number of wells, their cost is trifling and it must be borne in mind the nearer the wells the greater the number of plants a cooly can water per diem. (ii) *Number of plants watered per diem by one cooly*.—In Nellore a cooly watered 1,000 plants per diem, giving each plant half of a large chatty. In Tanjore the same number of plants was watered twice a day, each plant receiving two-thirds of a chatty. In South Arcot the number varied from 600 to 800 plants. In North Arcot a female cooly watered 150 to 200 plants, giving each plant one whole chatty, and in Trichinopoly only 135 plants. There is no doubt the figures in the last district do not represent a fair day's work, and there is no reason for the average being below that of other districts. With three wells to the acre a male cooly should water at least 600 plants per diem. (iii) *Length of time watered*.—In Nellore it was the practice to water the seedlings for four years. In the first year the plants were watered daily from time of putting out (September and October) until May after which the number of coolies employed depended upon the intensity of the south-west monsoon and the site of the plantation; on high sand banks daily watering was undertaken until the north-east monsoon. The second year watering was conducted from February to May and in August and September. The third year watering was confined to the months March to May and August and September, the same during the fourth year. The cost amounted to Rs. 41-14-4 per acre. In North Arcot it was the custom to water for three years throughout. In South Arcot, as a rule, plants were watered for six months in the first year, four or five in the second and occasionally during unfavourable seasons for some time in the third year.

The cost for two years' watering amounted to Rs. 26. In Tanjore plants have been watered for four months in the first year, eight in the second, six months in the third and two months in the fourth, and the cost has been Rs. 58 per acre. In Trichinopoly, watering was supposed to be carried on for eight months in the first year, six months in the second and three months in the third. The plants were only watered from four to six times per mensem, yet the cost of watering amounted to Rs. 96-2-6 per acre. It is certain that the watering charges in some of the district were excessive and no reason can be assigned for the excess. I feel convinced that under ordinary circumstances, except in North Arcot, it is seldom necessary to water regularly for more than two years, though it may be found advisable to water parts of plantations during the third year. Even in North Arcot it is decidedly unnecessary to water regularly for the whole three years.

(f) *Establishments*.—In some districts the permanent establishment undertook the supervision of plantations, in others temporary overseers were entertained. These charges cannot well be compared as they depend upon the strength and distribution of the permanent establishment.

(g) *Total cost per acre until the plantations are virtually left to themselves, exclusive of supervision charges*.—Nellore Rs. 42-14-0, North Arcot Rs. 45, South Arcot Rs. 32-6-0, Tanjore Rs. 68, Trichinopoly Rs. 108-11-6.

4. Since submission of these returns in every district it has been found possible to reduce the cost of these plantations. The following appears to me an extreme estimate of the cost per acre of a plantation on sandy soil on which the seedlings are put out 9' × 9' or 540 plants per acre :—

								RS.	A.	P.
Nursery charges	..	..	..	..	..	..	..	0	9	0
Pitting ..	..	..	..	..	..	..	..	0	6	0
Planting out	..	..	..	..	..	..	..	0	6	0
Wells ..	..	..	..	..	..	..	..	2	0	0

Watering.

First year—

RS. A. P.

Two months daily watering 600 plants per diem

$$\text{at 2 annas per cooly} = \frac{540 \times 2 \times 2 \times 30}{600} = 108$$

annas 6 12 0

Three months watering alternate days = $\frac{540}{600} \times$

$$\frac{30}{2} \times \frac{3}{1} \times \frac{2}{1} = 81 \text{ annas} \quad .. \quad .. \quad 5 \cdot 1 \quad 0$$

Three months watering every third day = $\frac{540}{600} \times$

$$\frac{30}{3} \times \frac{3}{1} \times \frac{2}{1} = 54 \text{ annas} \quad .. \quad .. \quad 3 \quad 6 \quad 0$$

————— 15 3 0

Second year—

Six months watering every third day = $\frac{540}{600} \times$

$$\frac{30}{3} \times \frac{6}{1} \times \frac{2}{1} = 108 \text{ annas} \quad .. \quad .. \quad 6 \quad 12 \quad 0$$

Third year—

	RS. A. P.
Four months watering every third day = $\frac{540}{600} \times$	
$\frac{30}{3} \times \frac{4}{1} \times \frac{2}{1} = 72$ annas	4 8 0
	<hr/>
	29 12 0
Add 10 per cent. for contingencies, or say ..	3 4 0
	<hr/>
	33 0 0
	<hr/>

5. From previous experience it should be safe to estimate that a plantation, except in North Arcot, will yield after ten years 40 tons per acre. The revenue after deducting felling and removal charges will certainly amount to Rs. 3 per ton = Rs. 120

Deduct—

Cost of planting	Rs. 33
Interest at 5 per cent. for ten years, say	16
Establishment charges, say 10 per cent. for ten years.. ..	33
	<hr/>
	82
	<hr/>
Total net revenue	Rs. 38
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Or Rs. $3\frac{1}{2}$ per acre per annum.

In districts like North Arcot, the estimated outturn will probably not be realized; on the other hand, however, it is certain the revenue will exceed Rs. 3 per ton and the net revenue should not fall below my estimate.



WR 9 '82.

I
Arnold